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Inventor : Takeshi SUZUKI  
Title : IMAGE REPRODUCTION APPARATUS  
Assignee : Olympus Optical Co., Ltd.

Enclosed herewith please find the following documents in the above-identified application for United States Letters Patent:

23 Pages of Specification including Abstract and Claims  
11 Numbered Claims Calculated as 11 Claims for Fee Purposes  
5 Sheets of Drawing Containing Figures 1 to 6B.  
X Declaration and Power of Attorney  
X Priority is Claimed under 35 U.S.C. §119:  
Convention Date November 13, 1998 for Japan Appln. S.N. 10-323200  
       Certified Priority Application  
       Verified Statement Claiming Small Entity Status under 37 C.F.R. §1.27.  
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TITLE OF THE INVENTION

IMAGE REPRODUCTION APPARATUS

BACKGROUND OF THE INVENTION

5 The present invention relates to an image reproduction apparatus including an electronic album capable of storing data including image data picked up by an electronic camera and character data, such as still images, moving images, voice, and text, in an album recording medium and then reproducing and  
10 displaying the data at any time.

In a prior art electronic album, a display area (screen) 100 is split into 9 ( $3 \times 3$ ) parts in which a plurality of images 101 of a fixed size are displayed as shown in FIG. 6A, or 16 ( $4 \times 4$ ) parts in which a  
15 plurality of images 102 of a fixed size are displayed as shown in FIG. 6B.

The prior art electronic album has no means for displaying panoramic image data easily and accurately.

The foregoing prior art electronic album is thus  
20 of no interest to a user because an at-a-glance display of plural images is fixed and lacks in diversity. Furthermore, a user cannot manage to display panoramic image data, and it is difficult for him or her to use a special panoramic image effectively.

25 BRIEF SUMMARY OF THE INVENTION

Accordingly, the object of the present invention is to provide an image reproduction apparatus including

an electronic album having the advantages that a plurality of images can be displayed at sight in a given layout and a panoramic image can be displayed easily and accurately.

5           To attain the above object, the image reproduction apparatus of the present invention has the following feature in constitution. The other features will be clarified later in the Description of the Invention.

10           An image reproduction apparatus according to the present invention, comprises display-image discrimination means for discriminating a display mode (normal display, at-a-glance display, panoramic display, etc.) in which selected image data is to be displayed, display-mode setting means for setting the display  
15           mode, which is discriminated by the display-image discrimination means, to the image data, and display means for displaying the image data in the display mode set by the display-mode setting means.

20           Additional objects and advantages of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of the instrumentalities and combinations particularly pointed out hereinafter.  
25

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The accompanying drawings, which are incorporated

in and constitute a part of the specification, illustrate presently preferred embodiments of the invention, and together with the general description given above and the detailed description of the preferred embodiments given below, serve to explain the principles of the invention.

FIG. 1 is a block diagram showing an electronic album as an image reproduction apparatus according to an embodiment of the present invention;

FIG. 2A is a block diagram showing means X, Y and Z of an image display control section of the electronic album according to the embodiment of the present invention;

FIG. 2B is a view showing an example of layout of a plurality of images displayed at sight by the image display control section of the electronic album according to the embodiment of the present invention;

FIG. 2C is a view illustrating a scroll operation for displaying a panoramic image by the image display control section of the electronic album according to the embodiment of the present invention;

FIG. 3 is a flowchart showing operations of normal display and scroll display in the electronic album according to the embodiment of the present invention;

FIGS. 4A to 4C are views of specific examples of display modes for displaying a panoramic image in the electronic album according to the embodiment of the

present invention;

FIGS. 5A to 5C are views of specific example of steps for splitting a panoramic image in the electronic album according to the embodiment of the present invention; and

FIGS. 6A and 6B are views showing a prior art electronic album in order to describe problems thereof.

#### DETAILED DESCRIPTION OF THE INVENTION

(Embodiment)

FIG. 1 is a block diagram showing an electronic album as an image reproduction apparatus according to an embodiment of the present invention. The electronic album is constituted chiefly of an image input section 10, an image data processing section 20, an image data recording/display section 30, a control section 40, an operation section 50 and a power supply section 60.

The image input section 10 includes a video input terminal 11, a video input circuit 12, an A/D conversion circuit 14, a correction circuit 15 and a frame memory 16. In the image input section 10, image data input to the video input terminal 11 is received by the video input circuit 12 and converted to a digital signal in the A/D conversion circuit 14. The digital signal is brought into white balance and gamma-corrected by the correction circuit 15, and then image data items are stored in the frame memory 16 one by one.

The image data processing section 20 is

constituted of a CPU 2 including an image  
(irreversible) compressing section 21a, an image  
(reversible) compressing section 21b, an image  
expanding section 22, a frame memory control section 23,  
5 a recording medium access section 24, and an image  
archiving section 25.

The "archiving" is a function of collecting  
a plurality of image data items, which are stored in  
different files, in a single file and thus effectively  
10 using an unused recording area of each of the files  
thereby to compress all the data items again.

The image data processing section 20 compresses  
the image data items, which are stored in the frame  
memory 16, one by one and stores them in an album  
15 recording medium 33 of the image data recording/display  
section 30. The section 20 also expands the image data  
items stored in the recording medium 33 and sends them  
to an FIFO memory 34 of the section 30. Further, the  
section 20 gains access to the recording medium 33 of  
20 the section 30.

The image data recording/display section 30  
includes a recording medium I/F 32, an album recording  
medium (e.g., a memory card) 33, a displaying FIFO  
memory 34, an on-screen circuit 35, a TFT liquid  
25 crystal driving circuit 36, a TFT panel 37, a TFT panel  
illuminating backlight unit 37a, a video output circuit  
38, and video output terminal 39. The section 30

records the image data, which is stored in the frame  
memory 16, in the album recording medium 33, and reads  
out the image data therefrom and transmits it to  
a display system (34, 35, 36, 37, 37a, etc.) for  
5 displaying an image.

The image data transmitted to the display system  
is stored temporarily in the FIFO memory 34 and read  
out therefrom. Then, the image data is converted to  
a video signal, and a title and the other characters  
10 are added thereto in the on-screen circuit 35. This  
video signal is supplied to the TFT panel 37 through  
the TFT liquid crystal driving circuit 36 and the panel  
37 is illuminated by the backlight unit 37a to display  
the video signal as a subject image, while the video  
15 signal is output from the video output terminal 39 via  
the video output circuit 38.

The control section 40 is constituted chiefly of  
a CPU 1 including a system control section 41 and an  
image display control section 42 to control the overall  
20 system including the image input section 10, image data  
processing section 20 and image data recording/display  
section 30.

The control section 40 is provided with an EEPROM  
46 for storing information for initializing the  
25 electronic album, an external data I/F 47 for  
exchanging data with a personal computer and the like,  
and an LCD circuit 48 for operating an LCD panel 49.

The operation section 50 is constituted mainly of a key matrix 51 and a frame-advance button 52 which are connected to the control section 40 and used for operating various switches to operate the album.

5       The power supply section 60 mainly includes a battery 61 (e.g., four batteries of 1.5V) to apply a given voltage to the respective sections through a power supply circuit 62.

10       FIGS. 2A to 2C illustrate the image display control section 42 of the electronic album of the present invention. Referring to FIG. 2A, the section 42 includes a display-image discrimination means X for discriminating a display mode in which selected image data is should be displayed, a display-mode setting  
15       means Y for setting a display mode discriminated by the display-image discrimination means X in the image data, and a display means Z for displaying the image data in the display mode set by the display-mode setting means Y.

20       The display-image discrimination means X discriminates whether the selected image data should be displayed normally, at a glance, or panoramically. This means X includes a means for, when the aspect ratio of an image to be displayed differs from that of  
25       a display area of a display device, discriminating that the image is a panoramic image.

The display-mode setting means Y sets a display



mode discriminated by the display-image discrimination means X, such as a "normal display" mode, an "at-a-glance display" mode and a "panoramic display" mode, in the image data.

5           If the means X discriminates that the image data should be displayed at a glance, all images to be displayed are laid out within a display area (display screen) 70, as shown in FIG. 2B, and, in this case, a location and size are set appropriately for each of  
10       images 71 to 75.

          If the means X discriminates that the image data should be displayed panoramically, a panoramic image 80 is scrolled and displayed in the display area 70 as shown in FIG. 2C.

15           The display-mode setting means Y includes a means for allowing the above scroll operation to be performed by the frame-advance button 52.

          The display means Z includes a means for performing various display operations (described later)  
20       by controlling the on-screen circuit 35 and TFT liquid crystal driving circuit 36 in accordance with the contents set by the display-mode setting means Y or in response to a command from the system control section 41.

25           FIG. 3 is a flowchart showing an operation of the image display control section 42 or an operation for normal display or scroll display performed by the

display-mode setting means Y and display means Z  
based on a discrimination result of the display-image  
discrimination means X.

[STEP S11]

5           An image display operation is started.

[STEP S12]

          A display image is selected.

[STEP S13]

10           It is discriminated whether the aspect ratios of  
the display image and display area differ or not.

          If NO (not differ), the flow advances to step S14.

          If YES, it goes to step S16.

[STEP S14]

15           When the aspect ratios are the same, the image is  
displayed normally. However, it is enlarged or reduced  
in accordance with the display area.

[STEP S15]

20           It is discriminated whether a frame-advance  
(scroll) operation has been performed or not. If NO,  
it is discriminated again whether the frame-advance  
operation has been performed. The same operation is  
repeated until the discrimination result is YES.

          When it is YES, the flow moves to step S20.

[STEP S16]

25           If the aspect ratios differ from each other, the  
image is discriminated as a panoramic image, and the  
scroll display is carried out. However, the image is

enlarged or reduced in accordance with the display area.

[STEP S17]

5 It is discriminated whether a frame-advance operation has been performed or not. If NO, it is discriminated again whether the frame-advance operation has been performed. The same operation is repeated until the discrimination result is YES. When it is YES, the flow moves to step S18.

[STEP S18]

10 It is discriminated whether the panoramic image is displayed to its end portion. If the discrimination result is NO, the flow goes to step S19. If YES, it advances to step S20.

[STEP S19]

15 The scroll operation is continued, and the flow returns to step S17.

[STEP S20]

20 It is discriminated whether a reproduction mode is terminated or not. If NO, the flow advances to step S21. If YES, it shifts to step S22.

[STEP S21]

The image is changed, and the flow returns to step S13.

[STEP S22]

25 A series of image display operations is completed.

FIGS. 4A to 4C illustrate specific examples of display operation modes for displaying a panoramic

image.

FIG. 4A shows an entire reduced-image display mode in which a panoramic image 80 is reduced as it is and the reduced panoramic image 80 is displayed at once within the display area 70. According to this display mode, the panoramic image is displayed on a single screen and thus can be seen in its entirety.

FIG. 4B illustrates a scroll display mode in which a panoramic image 80 is scrolled in a normal size and displayed in sequence within the display area 70. In this mode, each portion of the panoramic image 80 is displayed in a full size within the display area 70 and thus can be recognized exactly.

FIG. 4C shows a superimpose scroll display mode in which when a panoramic image 80 is scrolled and displayed in a normal size, a superimpose display 90 is performed in the display area 70 to indicate which portion of the image 80 is currently displayed therein. In this mode, the superimpose display 90 allows a user to confirm which portion of the panoramic image is currently displayed (e.g., which image is displayed), at first sight. Consequently, the user need not perform any unnecessary operation and the apparatus is improved in operability.

FIGS. 5A to 5C are views showing a divided-image stepping display mode. In this mode, when the aspect ratio of a panoramic image 80 (length L1 in the

lengthwise direction to length L2 in the widthwise direction) is plural times greater than that of the display area 70 (e.g., when the former ratio 12:3 is three times greater than the latter ratio 4:3), the panoramic image 80 is divided into three portions of a leading-edge portion, an intermediate portion and a trailing-edge portion in its longitudinal direction with each of the three portions corresponding to the display area 70 and, as shown in FIGS. 5A to 5C, these portions are advanced frame by frame and displayed step by step.

(Modifications)

The image reproduction apparatus according to the above embodiment can be modified as follows:

1) The apparatus may have a means for switching between the display modes shown in FIGS. 4A and 4B or a means for switching among the three display modes shown in FIGS. 4A, 4B and 4C. The apparatus can thus be improved in usability.

2) When the aspect ratio of an image to be displayed is greater than that of the display area 70, the image can be divided and displayed over plural times automatically. Since, in this mode, one image is divided and displayed plural times, it can be reproduced quickly without reducing an amount of information that the image originally has.

3) The apparatus may have a means for switching

between a frame-advance display mode in which an image  
is advanced frame by frame and displayed and a scroll  
display mode in which an image is scrolled and  
displayed, irrespective of whether the image is  
5 a panoramic one or not. These two display modes can  
be used selectively in accordance with a user's  
preference; thus, the apparatus can be improved further  
in usability.

4) The apparatus may have a single/overall image  
10 display mode switching means for switching between  
a single-image display mode and an overall-image  
display mode when a panoramic image is displayed in  
the display area 70. The former display mode includes  
a representative-image display for displaying only the  
15 central part of the panoramic image as a representative  
and a single-image display, such as an entire reduced-  
image display, for displaying the reduced panoramic  
image in the display area 70. The latter display mode  
includes a divided-image stepping display for advancing  
20 the panoramic image frame by frame and displaying it  
step by step and an overall-image display, such as a  
scroll display, for scrolling the panoramic image from  
one end to the other end and displaying it continuously.

5) The foregoing embodiment is directed to  
25 an electronic album for storing data containing image  
data and character data together in a recording medium.  
However, the electronic album can be incorporated in

an electronic camera and, in this case, the recording medium can be detached from the camera.

(Features of the Embodiment and Modifications)

5 [1] An image reproduction apparatus according to the above embodiment, comprises display-image discrimination means (X) for discriminating a display mode (normal display, at-a-glance display, panoramic display, etc.) in which selected image data is to be displayed, display-mode setting means (Y) for setting  
10 the display mode, which is discriminated by the display-image discrimination means (X), to the image data, and display means (Z) for displaying the image data in the display mode set by the display-mode setting means (Y).

15 [2] In the image reproduction apparatus according to the above item [1], the display-mode setting means (Y) includes means for appropriately setting a location and size of each image data to be displayed and (as shown in FIG. 2B) laying out all images within  
20 a designated display area (70) when the display-image discrimination means (X) discriminates that the image data is to be displayed at a glance.

The foregoing image reproduction apparatus allows a user to consciously designate a visual size and  
25 location of image data to be displayed, regardless of the number of pixels or the capacity of the image data, when the image data is displayed at a glance.

The apparatus can thus be improved further in usability.

[3] In the image reproduction apparatus according to the above item [1], the display-image discrimination means (X) includes means for discriminating that the image data is a panoramic image (80) when the aspect ratio of the image data differs from that of a display area (70) of a display device.

[4] In the image reproduction apparatus according to the above item [1], the display-mode setting means (Y) includes means for performing a scroll operation of a panoramic image (80) in a display area (70) (as shown in FIG. 2C) using a frame-advance button (52) when the display-image discrimination means (X) discriminates that the image data is to be displayed panoramically.

[5] In the image reproduction apparatus according to the above item [4], the display-mode setting means (Y) includes means for, when the frame-advance button is operated again after the scroll operation of the panoramic image (80) is completed, starting a scroll operation of a subsequent panoramic image (80) automatically.

The foregoing apparatus allows a plurality of panoramic images to be displayed with efficiency.

[6] In the image reproduction apparatus according to the above item [1], the display means (Z) includes means for switching a scroll display mode for scrolling a panoramic image and a frame-advance display mode for



advancing images frame by frame.

In the above apparatus, the two display modes can be used selectively in accordance with a user's preference.

5           [7] In the image reproduction apparatus according to the above item [1], the display means (Z) includes means for switching an entire reduced-image display mode (FIG. 4A) in which a panoramic image (80) is reduced as it is and the reduced panoramic image (80)  
10 is displayed at once within a display area (70) and a scroll display mode (FIG. 4B) in which a panoramic image (80) of a normal size is scrolled and displayed.

In the foregoing apparatus, if the reduced panoramic image (80) is displayed at once in the  
15 display area (70), the entire panoramic image (80) can be confirmed at first sight. If the scroll display mode is selected, the display area (70) can be utilized considerably effectively to display each image in a full size and confirm it exactly.

20           [8] In the image reproduction apparatus according to the above item [1], the display means (Z) includes means for clearly displaying whether an image displayed in a display area (70) is part or all of the image data.

Since, in this apparatus, the location and status  
25 of the image currently displayed in the display area (70) can be recognized, a user can prevent from missing display data that he or she thinks really necessary.

[9] In the image reproduction apparatus according to the above item [1], the display means (Z) includes means for performing a superimpose display to show which portion of a panoramic image (80) is currently  
5 displayed in a display area (70) (e.g., to show which image is displayed) when the panoramic image (80) is scrolled in a normal size.

In the above image reproduction apparatus, when part of a panoramic image (80) is displayed, a user  
10 knows at first sight which part of the original image data it is. The user therefore need not perform any unnecessary operation and the apparatus is improved in operability for image observation.

[10] In the image reproduction apparatus  
15 according to the above item [1], the display means (Z) has a divided-image stepping display mode in which a panoramic image (80) is divided into a plurality of (three) areas and the areas are advanced frame by frame and displayed step by step (e.g., the leading-edge  
20 portion is displayed first as shown in FIG. 5A, an intermediate portion is displayed secondly as shown in FIG. 5B, and a trailing-edge portion is displayed thirdly as shown in FIG. 5C) when an aspect ratio (L1:L2 in FIG. 5A) of the panoramic image (80) is  
25 plural times larger than that of a display area (70) (e.g., when the aspect ratio 12:3 of the panoramic image (80) is three times as large as that 4:3 of the

display area (70)).

When the above apparatus is set in the divided-image stepping display mode, one image is displayed over plural times. Therefore, the whole image can be reproduced and displayed very quickly without reducing an amount of information that the image originally has.

[11] The image reproduction apparatus according to the above item [1] further comprises a single/overall image display mode switching means for, when a panoramic image (80) is displayed in a display area (70), switching between a single-image display mode including a representative-image display for displaying only the central part of the panoramic image as a representative and a single-image display, such as a reduced-image display, for displaying the reduced panoramic image in the display area (70), and an overall-image display mode including a divided-image stepping display for advancing the panoramic image frame by frame and displaying it step by step and an overall-image display, such as a scroll display, for scrolling the panoramic image from one end to the other end and displaying it continuously.

In the foregoing image reproduction apparatus, the single-image display mode has only to be selected for the purpose of retrieval since an amount of information is small and a frame-by-frame advance is fast, while the overall-image display mode has only to be selected



CLAIMS

1. An image reproduction apparatus comprising:  
display-image discrimination means for discrimi-  
nating a display mode in which selected image data is  
5 to be displayed;

display-mode setting means for setting the display  
mode, which is discriminated by the display-image  
discrimination means, to the image data; and

10 display means for displaying the image data in the  
display mode set by the display-mode setting means.

2. An image reproduction apparatus according  
to claim 1, wherein the display-mode setting means  
includes means for appropriately setting a location and  
size of each image data to be displayed and laying out  
15 all images within a designated display area when the  
display-image discrimination means discriminates that  
the image data is to be displayed at a glance.

3. An image reproduction apparatus according to  
claim 1, wherein the display-image discrimination means  
20 includes means for discriminating that the image data  
is a panoramic image when the aspect ratio of the image  
data differs from that of a display area of a display  
device.

4. An image reproduction apparatus according  
25 to claim 1, wherein the display-mode setting means  
includes means for performing a scroll operation of a  
panoramic image in a display area using a frame-advance



performing a superimpose display to show which portion of a panoramic image is currently displayed in a display area when the panoramic image is scrolled in a normal size.

5           10. An image reproduction apparatus according to claim 1, wherein the display means has a divided-image stepping display mode in which a panoramic image is divided into a plurality of areas and the areas are advanced frame by frame and displayed step by step when  
10 an aspect ratio of the panoramic image is plural times larger than that of a display area.

          11. An image reproduction apparatus according to claim 1, further comprising a single/overall image display mode switching means for, when a panoramic  
15 image is displayed in a display area, switching between a single-image display mode and an overall-imaged display, the single-image display mode performing a single-image display including a representative-image display and a reduced-image display, and the overall-  
20 image display mode performing an overall-image display including a divided-image stepping display and a scroll display.

An image reproduction apparatus includes display-  
image discrimination unit for discriminating a display  
mode (normal display, at-a-glance display, panoramic  
5 display, etc.) in which selected image data is to be  
displayed, display-mode setting unit for setting the  
display mode, which is discriminated by the display-  
image discrimination unit, to the image data, and  
display unit for displaying the image data in the  
10 display mode set by the display-mode setting unit.



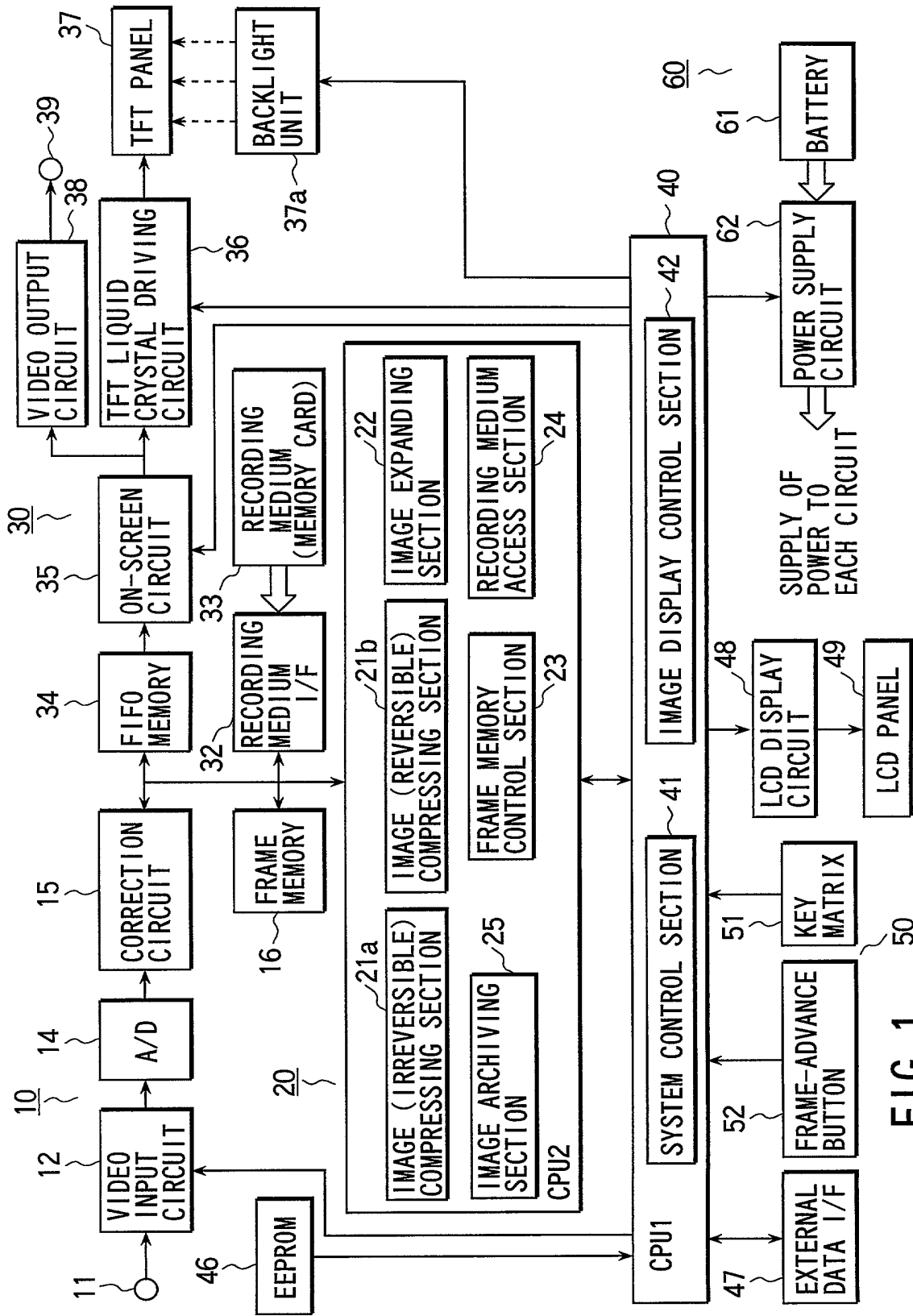


FIG.1

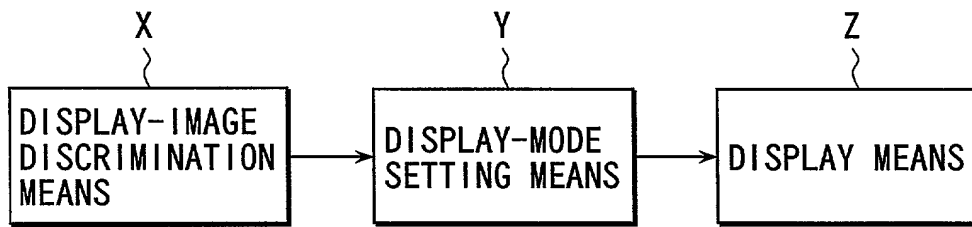


FIG. 2A

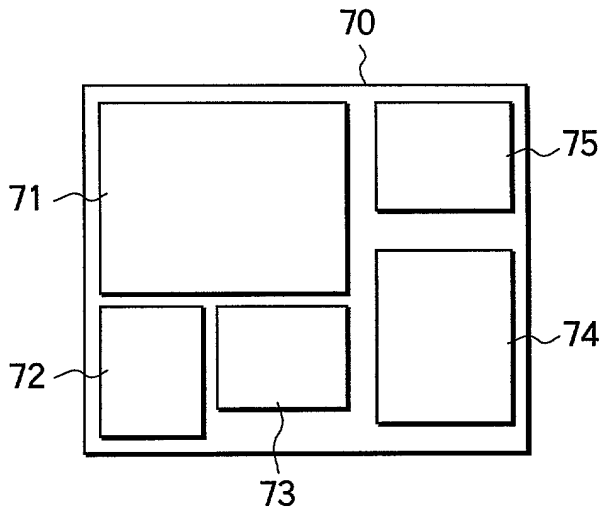


FIG. 2B

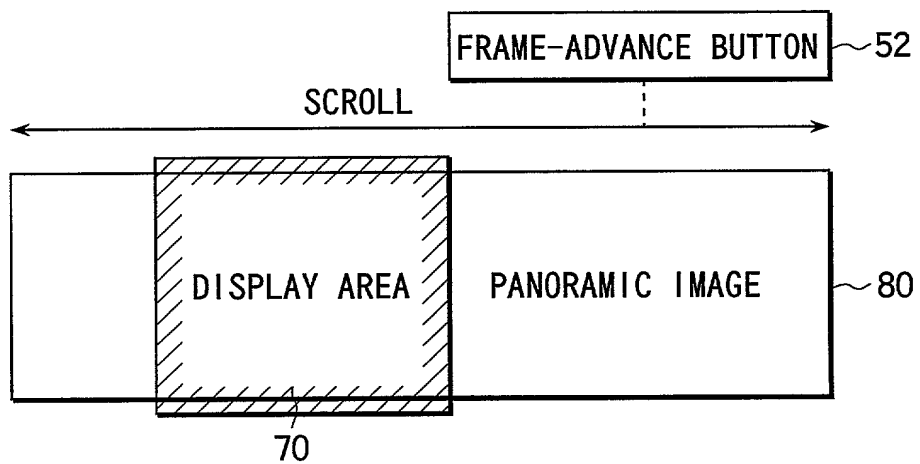


FIG. 2C

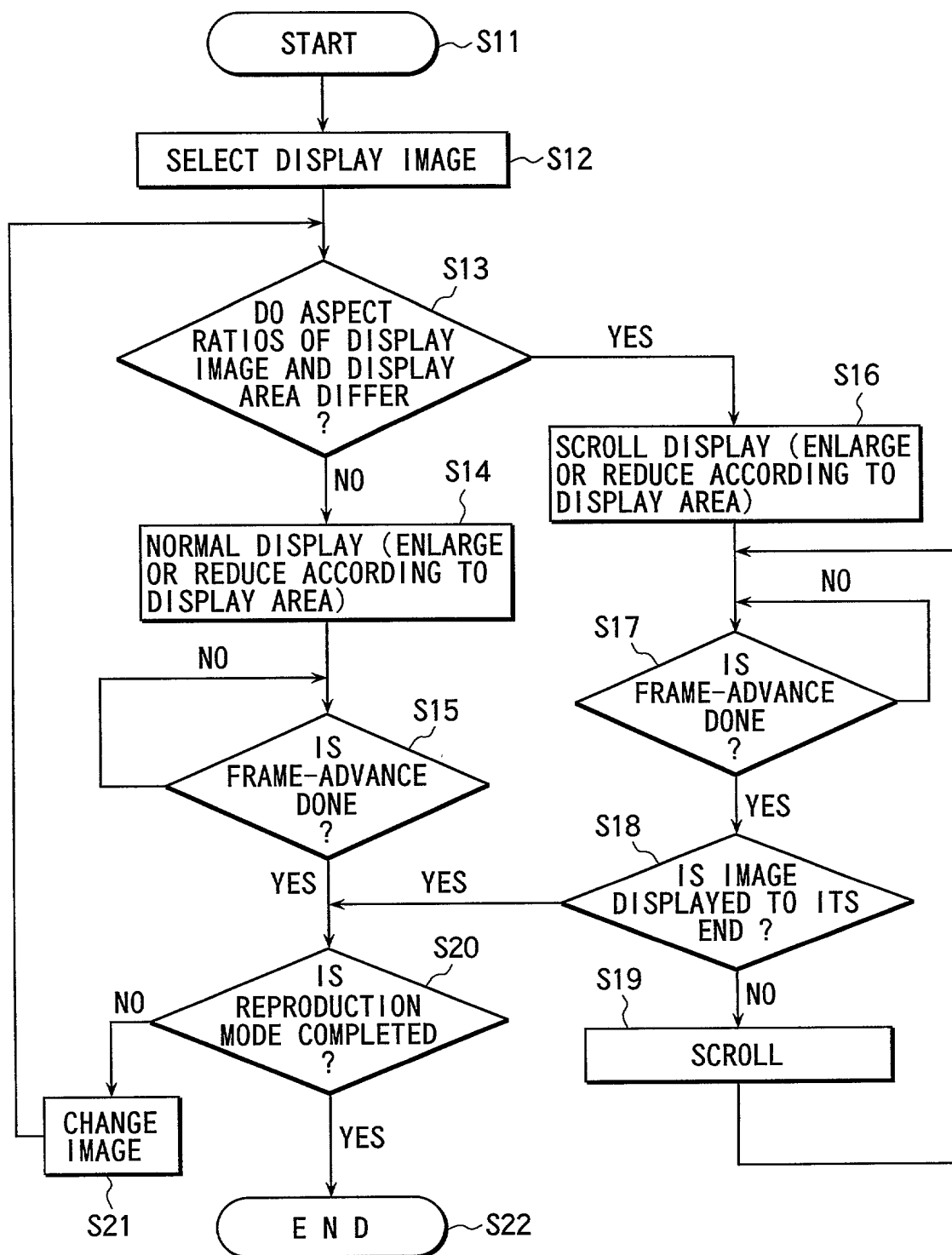


FIG.3

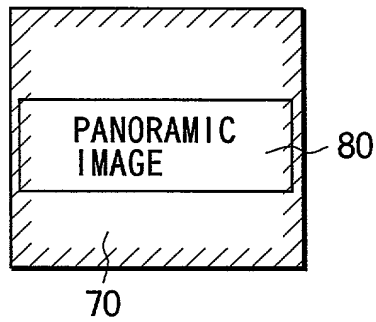


FIG. 4A

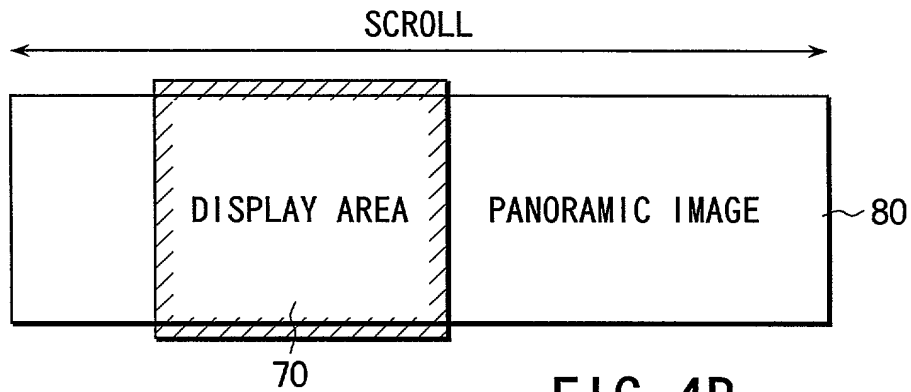


FIG. 4B

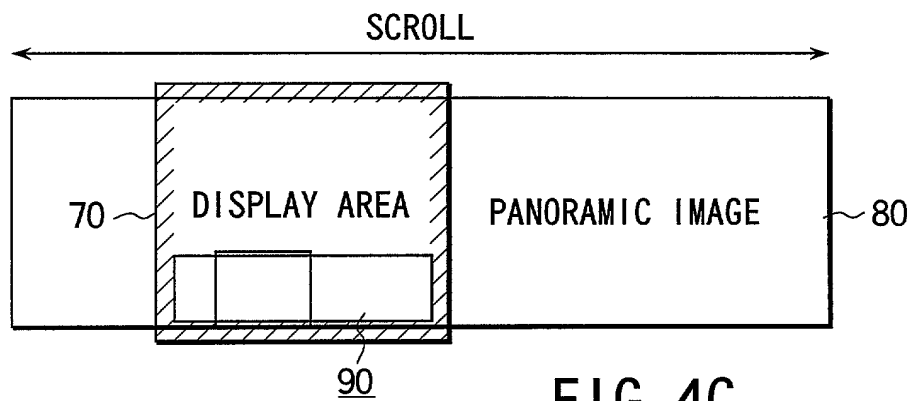


FIG. 4C

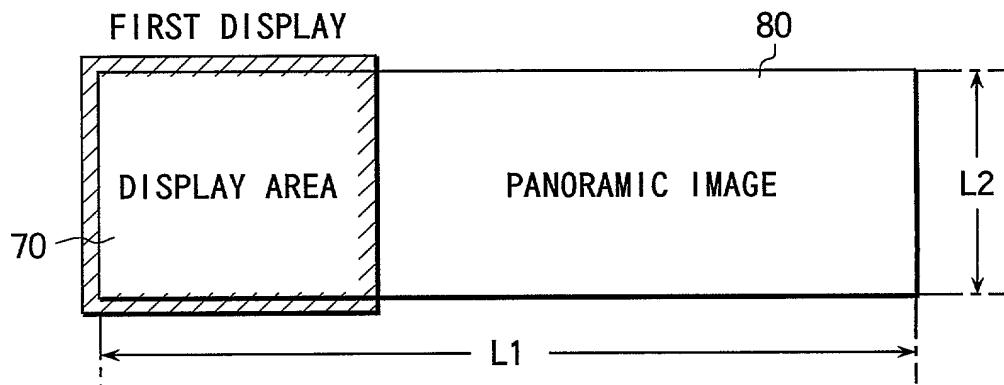


FIG. 5A

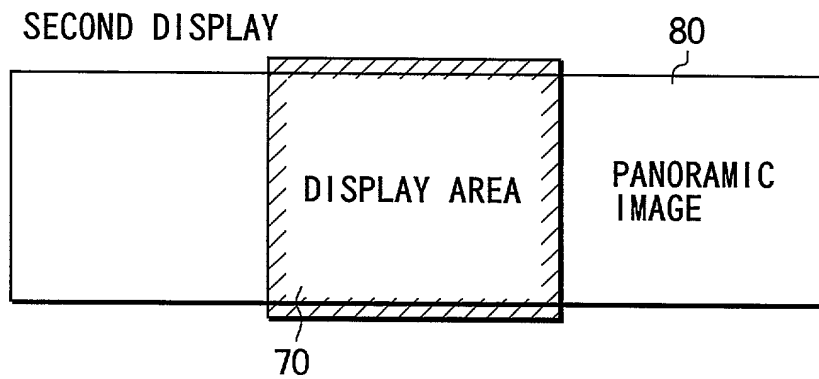


FIG.5B

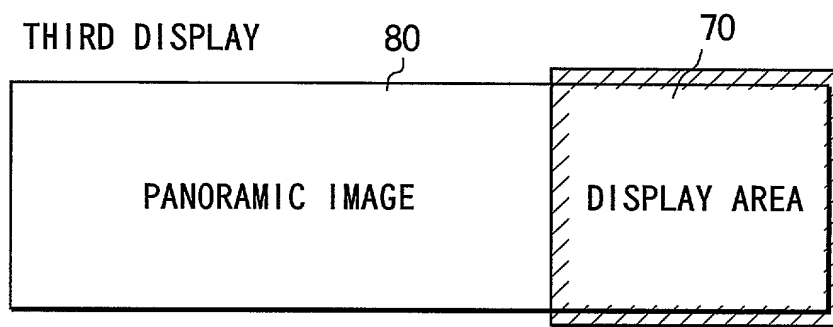


FIG.5C

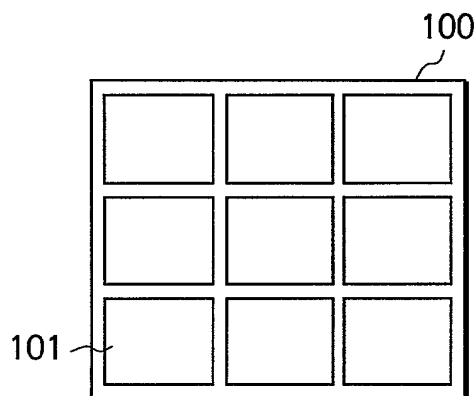


FIG.6A  
(PRIOR ART)

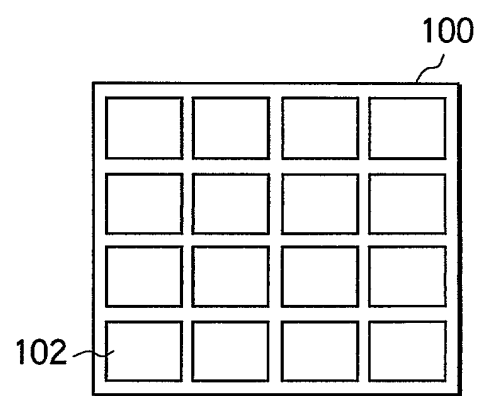


FIG.6B  
(PRIOR ART)

# Declaration Power of Attorney For Patent Application

## 特許出願宣言書及び委任状 Japanese Language Declaration 日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の横に記載された通りです。

My residence, post office address and citizenship are as stated below next to my name,

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

画像再生装置

IMAGE REPRODUCTION APPARATUS

上記発明の明細書（下記の欄で×印がついていない場合は、本書に添付）は、

The specification of which is attached hereto unless the following box is checked:

☐ \_\_\_\_\_月 \_\_\_\_\_日に

提出され米国出願番号または特許協定条約

☐ was filed on \_\_\_\_\_  
as United States Application Number or  
PCT international Application Number

国際出願番号を \_\_\_\_\_ とし、

\_\_\_\_\_ and was amended on

（該当する場合） \_\_\_\_\_ 月 \_\_\_\_\_ 日に訂正されました。

\_\_\_\_\_ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されたとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56

## Japanese Language Declaration

(日本語宣言書)

私は、合衆国法典第35編第119条(a)-(d)項又は第365条(b)に基づき下記の、米国以外の国の少なくとも一カ国を指定している特許協力条約365(a)項に基づき国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

I hereby claim foreign priority under Title 35, United States Code, Section 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)  
外国での先行出願

Priority Not Claimed  
優先権の主張なし

10-323200

JAPAN

13/11/1998

(Number)  
(番号)

(Country)  
(国名)

(Day/Month/Year Filed)  
(出願年月日)

☐☐☐☐☐

私は、第35編米国法典119条(e)項に基づいて下記の米国特許出願規定に記載された権利をここに主張いたします。

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)  
(出願番号)

(Filing Date)  
(出願日)

(Application No.)  
(出願番号)

(Filing Date)  
(出願日)

私は、下記の米国法典第35編120条に基づいて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約365条(c)に基づき権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1条56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) or 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT Information application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which become available between the filing date of the prior application and the national or PCT international filing date of application:

(Application No.)  
(出願番号)

(Filing Date)  
(出願日)

(Status: Patented, Pending, Abandoned)  
(現況: 特許許可済、係属中、放棄済)

(Application No.)  
(出願番号)

(Filing Date)  
(出願日)

(Status: Patented, Pending, Abandoned)  
(現況: 特許許可済、係属中、放棄済)

私は、私自身の知識に基づいて本宣言書中で私が行う表明が真実であり、かつ私の入手した情報と私の信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行えば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

0651-0032-1100

## Japanese Language Declaration

(日本語宣言書)

委任状: 私は、下記の発明者として、本出願に関する一切  
の手続きを米特許商標局に対して遂行する弁理士または代理  
人として、下記の者を指名いたします。  
(弁理士、または代理人の氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I  
hereby appoint the following attorney(s) and/or  
agent(s) to prosecute this application and transact  
all business in the Patent and Trademark Office  
connected therewith. (list name and registration  
number)

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同発明者の署名 日付	Inventor's signature Date Takeshi Suzuki Nov, 5, 1999
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(第二以降の共同発明者に対しても同様に記載し、署名を  
すること。)

(Supply similar information and signature for second  
and subsequent joint inventors.)

0651-0032-1180